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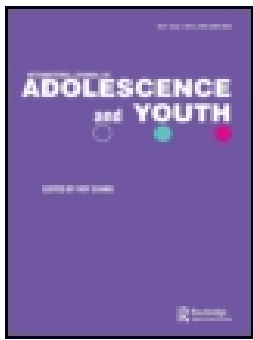
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Family and school social capital, school burnout and academic achievement: a multilevel longitudinal analysis among Finnish pupils

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ABSTRACT

Research on the associations between family and school social capital, school burnout and academic achievement in adolescence is scarce and the results are inconclusive. We examined if family and school social capital at the age of 13 predicts lower school burnout and better academic achievement when graduating at the age of 16. Using data from 4467 Finnish adolescents from 117 schools and 444 classes a three-level multilevel analysis was executed. School social capital, the positive and supportive relationships between students and teachers, predicted lower school burnout and better academic achievement among students. Classmates' family social capital had also significance for students' academic achievement. Our results suggest that building school social capital is an important aspect of school health and education policies and practices.

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Adolescents; social capital; school burnout; academic achievement; multilevel design; longitudinal study

Introduction

Social capital can be understood as a precondition for healthy social and cognitive development of children and adolescents (e.g. Coleman, 1988, 1990) and it comprises aspects of relationships, networks, norms and trust (Portes, 1988; Schaefer-McDaniel, 2004). For adolescents, the transition from basic education to upper secondary education and training is one of the critical episodes of their life course. During these years, adolescents are becoming increasingly more independent and the demands on scholastic achievements are increased (Danielsen, Samdal, Hetland, & Wold, 2009). Low academic achievement during compulsory education is the strongest predictor of unsuccessful transition to upper secondary education. This, in turn, is a critical predictor of shorter educational and vocational careers overall, of educational dropout, and of lowered well-being in adulthood (e.g. Dufur, Parcel, & Troutman, 2013).

The family is a primary context for adolescents' psycho-social development. The ways in which the parents interact and invest in the relationships with their children may have significant influence on adolescents' life paths (Dufur et al., 2013; Parcel, Dufur, & Zito, 2010). In terms of learning and achievement, the school may be considered the primary context for educational outcomes, while adolescents' home environment, socio-economic resources and the content and quality of parent-child interactions affect educational outcomes (Castro et al., 2015; Wilder, 2014). Apart from educational achievements, research

has shown that school context influences students' development, mental and physical health (Eccles & Roeser, 2011; Gustafsson et al., 2010; Sellstrom & Bremberg, 2006). There is also a strong connection between school performance and indicators for health and well-being during adolescence (Due et al., 2011; Suhrcke & de Paz Nieves, 2011). Thus, there is evidence that home and school contexts have significant impact both on students' well-being and achievement and that students in better health have higher academic performance. In this study, we investigate whether school and family factors conceptualized as social capital predict better academic achievement and lower school burnout, one indicator of academic well-being, in a longitudinal design.

Social capital

Social capital as a concept or theoretical framework is widely used throughout social sciences but it is a contested concept, lacking a single, generally accepted definition (Morrow, 1999; Portes, 1988; Waithaka, 2014). The concept of social capital related to children was developed most systematically by Coleman (1988, 1990) and social capital is generally linked to the research on adolescents and children mostly through Coleman's work (Korkiamäki & Ellonen, 2008; Morrow, 1999). In this study we also follow Coleman's (1988, 1990) line of thought according to which social capital can be understood as an underlying construct influential in both families and schools. For Coleman, social capital is a characteristic of the social structure and not of each individual within it. Social capital for Coleman is a resource emerging from social structure and ties between persons which can be a significant determinant for adolescents' well-being and educational achievement (Plagens, 2011).

School social capital is considered to manifest in various combinations of relationships between students, teachers and parents and which support academic achievements and has implications for well-being. (Coleman, 1988, 1990; Parcel et al., 2010). Research have found evidence that school social capital is related to better academic achievement (Haghighat, 2005; Tsang, 2010). Research on the associations between school social capital and health outcomes, including academic well-being, is scarce, yet (Virtanen, Ervasti, Oksanen, Kivimäki, Vahtera, 2013). However, in their recent review, Kidger, Araya, Donovan, and Gunnell (2012) found some evidence that students' sense of connectedness to their schools and their perceptions regarding teacher support has an effect on their emotional health. In this study, we define school social capital as referring to the positive and trustful relationships between students and teachers. Currently multilevel studies on school social capital are scarce and in order to deepen our understanding on the effects of school social capital, a multilevel approach is needed.

Family social capital refers to the bonds between parents and children useful in promoting various social outcomes, such as child well-being. These bonds include time and attention which parents spend in interaction with children and in monitoring their activities (Parcel et al., 2010). In Coleman's theory family social capital encompasses five main components: family structure, quality of parent–child relations, adult's interest in the child, parents' monitoring of the child's activities and obligations of trust and reciprocity and established norms and values in relationships (Ferguson, 2006). In terms of health outcomes, research evidence has shown that social capital measured as a high level of cohesion in family relationships, and parental surveillance and interactions with their children predicted better mental health in adolescents (Virtanen et al., 2013). Ferguson's (2006) review of family social capital found that intensive social interactions decreased adolescents' likelihood of dropping out of school. Also high levels of parental monitoring of children's activities are shown to be associated with positive outcomes in academic performance and higher levels of psychological adjustment. (Coleman & Hoffer, 1987; Voydanoff & Donnelly, 1999). The meta-analysis by Wilder (2014) indicated that the relationship between parental involvement and academic achievement was positive and consistent across different grade levels and ethnic groups. However, when parents' monitoring of schoolwork is perceived as too controlling (such as practices characterized by pressure, intrusiveness), even well-intended monitoring has been found to be associated with lowered motivation and achievement (Gonida & Cortina, 2014).

There are several studies, which have indicated that higher social capital, either at school, at home, or both, is related to better academic achievement (Dufur et al., 2013; Parcel et al., 2010). In terms of

health outcomes, Eriksson, Hochwälder, Carlsund, and Sellström (2012)) found that social capital in the family, school and neighborhood predicted lower levels of health complaints and higher levels of well-being among children aged 11–15 years. In their review article on social capital and health, Morgan and Haglund (2009) showed that social capital at home, school and neighborhood mattered for adolescent health and health-related outcomes. For the present, multilevel studies of social capital among adolescents are scarce and most studies have focused on the individual-level social capital in various contexts. Our study contributes to this gap of knowledge by using a multilevel approach and exploring the effects of both student, class and school-level social capital on adolescents' academic well-being and academic achievement. A multilevel approach enables the examining of contextual social capital's influence above students' individual effects. We consider class and school-level social capital as potential collective resources for adolescents beyond their individual experiences of one-to-one interactions.

School burnout and academic well-being

Students' academic well-being is an important indicator of the educational process (Rueger, Malecki, & Demaray, 2010; Tuominen-Soini, Salmela-Aro, & Niemivirta, 2012). However, there is no consensus regarding either the definition or operationalization of academic well-being. In the present study, we focus on school burnout as one essential indicator of academic well-being. Research has shown that both positive and negative emotional school engagement have remarkable interconnections with academic and psychological functioning (Li, Lerner, & Lerner, 2010; Li & Lerner, 2011; Wang & Degol, 2014; Wang & Fredricks, 2014; Wang, Chow, Hofkens, & Salmela-Aro, 2015). School burnout is a concept related to school ill-being. Burnout was originally regarded as a work-related disorder (Maslach, Schaufeli, & Leiter, 2001), but the concept has recently been found to be useful and transferrable to the school setting (Kiuru, Aunola, Nurmi, Leskinen, & Salmela-Aro, 2008; Salmela-Aro, Kiuru, Leskinen, & Nurmi, 2009; Walburg, 2014). School-related burnout can be defined as a combination of exhaustion at schoolwork, cynicism toward the meaning of school, and sense of inadequacy as a student. It can be caused by discrepancies between student's internal resources, school workload and expectations of school results which can all be considered critical signs of emotional disengagement and which are related to low academic achievement (Kiuru et al., 2008; Wang et al., 2015).

Academic achievement

Academic achievement builds on interaction between many variables, such as subjects' characteristics, both cognitive and non-cognitive (personality traits, self-perceptions etc.), classroom practices (teacher-student interaction), and contextual variables (home and community context) (Hattie, 2009). Research has shown that differences between neighborhoods (home and community context) affect school achievement causing between-school variations. Meta-analyses of school effects on achievement outcomes have produced varied results (cf. Sellstrom & Bremberg, 2006). School effect (controlled for SES) is around 8% (Scheerens & Bosker, 1997), and the classroom effect begins at 16% and reaches 60% (Alton-Lee, 2003). Hattie (2009) cited various meta-analyses emphasizing within-school effects over between-school effects while first, teacher-student relationship has shown to have a strong effect on academic achievement and second, class composition seems to be an efficient solution to meeting the differing needs of individual students. In Finland, the school-level effect is one of the lowest among the OECD countries, accounting for only around 5% to 8% according to the PISA results (OECD, 2008). However, between-class differences are higher when compared to other Nordic countries (Yang Hansen, Gustafsson, & Rosén, 2014).

Aims

Considering the centrality of home and school in the lives of adolescents and the importance of social capital for academic well-being and academic achievement, it is important to study both of these outcomes simultaneously. Research has shown that academic well-being and academic performance are intertwined: good academic performance is positively related to schoolwork engagement (Salmela-Aro & Upadaya, 2012) and negatively related to school burnout (Salmela-Aro et al., 2009). So far, longitudinal and multilevel studies on associations between school and family social capital, school burnout and academic achievement are limited. Since research has shown between-school variance in students' health and education-related outcomes, we are especially interested in whether there is a school or class-level impact of social capital on the outcomes.

We address the following research questions:

- (1) Do school and family social capital, at the beginning of lower secondary school at the age of 13, predict school burnout and academic achievement at the age of 16?
- (2) Do associations between (a) family and school social capital and school burnout and (b) family and school social capital and academic achievement hold true when earlier burnout, academic achievement and parents' education are controlled for?

Methods

The present study was based on three school surveys conducted in 2011 and 2014 and on the register data from the Finnish post-compulsory education application register in 2014 (Table 1). The datasets were linked together. Two baseline surveys conducted in 2011 (health and learning surveys in the seventh grade) and one follow-up in 2014 (health survey in the ninth grade) in the Helsinki metropolitan area of Finland which spans 14 municipalities. All seventh-graders (ages 12–13) were invited to participate in the baseline surveys in 2011 (*N* = 13,012). The recruitment occurred through the educational authorities of the municipalities, each of which gave permission for the study. The Ethical Committee of the National Institute of Health and Welfare approved the protocol. Because the study was part of normal schoolwork, parental consent was not required. However, two of the municipalities obliged parental consent statements, which were collected. An informational letter was delivered to parents in the remaining 12 municipalities.

Of the recruited seventh graders, 9497 participated in the health survey (response rate of 73%) and 10,917 in the learning-to-learn survey (response rate of 84%) in 2011. Special schools and classes for children with serious learning difficulties, intellectual disabilities or those situated in pediatric hospital wards were excluded from the sample because of the students' expected difficulty with answering the questions. Five schools from the city of Helsinki did not participate, and two of the schools had computer classes under construction. One school did not receive the individual passwords in time, and two administratively independent schools were not interested in participating. The other non-respondents included those absent from school on the survey day (typically 10–15% of students each day) and those who refused to participate or whose parents' consent statement was negative or not received. The participating schools did not have information about whether the pupil had refused to

Table 1. Data in the study.

2011	2014	2014
Baseline surveys: Learning-to-learn assessment Health survey Autumn term of 7th grade (age 12–13)	Follow-up survey: Health survey End of 9th grade, end of compulsory basic education (age 15–16)	Post-compulsory education application register data Students whose grades were available in the register and who had answered all three 3 surveys <i>N</i> = 5583
Students who answered both questionnaires <i>N</i> = 9079	Students who had answered all three questionnaires <i>N</i> = 5742	

participate or was absent from school. A follow-up health survey was conducted in spring 2014, at the end of lower secondary school (the ninth grade). The follow-up health survey was conducted applying the same procedure as the health survey of 2011.

The data was gathered as part of school routine. The participants completed health surveys online in computer classrooms. The learning-to-learn assessment was conducted using paper and pencil. A total of 5742 students participated in the three surveys. Questionnaires with missing information for class specification were excluded. Classes and schools with less than five participants were excluded in order to eliminate possible bias for aggregated class and school-level variables. Participants who had the complete data in the analysis variables and whose school leaving certificates were available in the register were included in the analyses. The final study population consists of 4467 students (50.8% girls), from 444 classrooms and 117 schools. The number of students from each class varied between 5 and 22 students ($M = 11.62$, $SD = 3.88$) and from each school between 5 and 132 students ($M = 55.02$, $SD = 27.31$).

Non-response analysis

Students in the multilevel analyses ($N = 4467$) were compared to those 9079 students who completed the two questionnaires in the seventh grade, using Chi-square statistics or the Mann-Whitney U-test, as appropriate, to check to what extent the final sample represents the study population. No significant difference was found in gender distribution, family education, or school burnout in the ninth grade. However, the students in the final had slightly lower seventh-grade school burnout than the whole sample of respondents who completed the questionnaires in the seventh grade ($U = 19,014,091$, $r = .21$, $p < .01$). Students' academic achievement was somewhat higher in the final sample both in the seventh and ninth grade than among those who completed the questionnaires in the seventh grade (respectively, $U = 17,840,861$, $r = .21$, $p < .001$; $U = 18,217,715.5$, $r = .21$, $p < .001$). Moreover, students in the multilevel analyses had slightly higher seventh-grade school social capital and family social capital than the whole sample of students in the seventh grade (respectively, $U = 17,721,542.5$, $r = .22$, $p < .05$; $U = 18,630,680$, $r = .22$, $p < .01$). In sum, the final research population had somewhat better academic achievement and higher school and family social capital than the original cohort but the differences were small according to the rank correlations.

Measures

Following Coleman's line of thought (1988, 1990), we measure both family and school social capital.

School social capital

School social capital in the seventh grade was measured by nine items (e.g. 'I feel that my teachers appreciate me', 'I feel that our teachers treat students fairly', 'I feel that teachers accept me as I am', 'I feel that our teachers acknowledge and respect student's own opinions', 'I usually get along well with my teachers'). The scale was 1–7 (1 = not true, 7 = very true). Item scores were summed to a total score. Higher scores reflected greater school social capital. The reliability of the sum variable was very good ($\alpha = .932$). (See Table 2).

Family social capital

In Coleman's concept, parents' monitoring of the child's activities is one of the dimensions of family social capital. We use the scale by Brown, Mounts, Lamborn, and Steinberg (1993) on adolescent's behavioral control. A five-item scale on how much the adolescents think their parents 'really know' about their activities measured family social capital: 'Who my friends are', 'Where I am after school', 'Where I go at night', 'How much money I spend' and 'Where I am most afternoons after school'. Each

subscale comprised three options, which were assessed using a 3-point scale (2 = a parent knows well, 1 = knows quite well, 0 = does not know at all). The same five items were assessed for mother and father separately. A total score was composed of ten items (five items for each parent), with the total score ranging from 0 to 20. Higher scores reflected greater family social capital. The reliability of the sum variable was good ($\alpha = .892$).

School burnout

The first dependent variable, school burnout in the ninth grade, was assessed by using the School Burnout Inventory (SBI) developed by Salmela-Aro and colleagues (for validity and reliability, see Salmela-Aro et al., 2009). The inventory consists of three subscales: exhaustion at school (e.g. 'I feel overwhelmed by my schoolwork'), cynicism toward the meaning of school (e.g. 'I'm continually wondering whether my schoolwork has any meaning'), and sense of inadequacy as a student (e.g. 'I often have feelings of inadequacy in my schoolwork'). Each subscale comprised three items, which were assessed using a 6-point Likert-type scale ranging from 1 (Completely disagree) to 6 (Completely agree). A composite score was constructed using nine items, with the total score ranging from 9 to 45 and showing good reliability of the sum variable ($\alpha = .886$). School burnout in the seventh grade was composed in the same way ($\alpha = .880$) and used as a controlling variable. The variable of school burnout in the ninth grade was available on 5219 students.

Academic achievement

The second dependent variable, academic achievement in the school-leaving certificate, was examined using a mean of the sum of the grades in three subjects: mother tongue, mathematics, and foreign language (starting in grades 1–3). The grade scale is 4–10 (4 = fail, 10 = excellent). The grades were obtained from the Finnish post-compulsory education application register system at the end of students' upper secondary education 2014 and when they were not available, from the ninth grade survey. The register contained the grades of those 5742 students who had answered all three questionnaires as follows: mother tongue ($N = 5583$), mathematics ($N = 5583$), and foreign language ($N = 5559$). The national register of the joint application system entails only the grades of those students who applied into general upper secondary or vocational upper secondary education, but lacks the grades of those students who applied into specialized vocational education and training institutions, to the 10th grade in lower secondary education, to pre-vocational education, or did not apply.

Academic achievement reported by students in the seventh grade was used as a controlling variable. Previous research has detected excellent validity of the self-reported grades in Finland (Kupiainen, Vainikainen, Marjanen, & Hautamäki, 2014). Seventh grade academic achievement was compared to academic achievement in the ninth grade using a mean of the sum of the grades in three subjects (Table 2).

Table 2. Descriptive statistics ($N = 4467$).

	Mean	SD	Range
School burnout (7th grade)	21.506	7.858	9–45
School burnout (9th grade)	24.714	7.556	9–45
Academic achievement (7th grade)	8.325	.856	4–10
Academic achievement (9th grade) ^a	8.133	1.058	4–10
School social capital	46.420	9.865	9–63
Family social capital	15.232	4.167	0–20

^aAcademic achievement in the ninth grade. Higher scores are indicative of higher levels of variables.

Family education

Family education was used as a background variable. Family education was asked separately for mothers and fathers and the highest education level for each parent was included in the analysis. The question was 'What kind of education do your parents have?' The options were: basic education only, vocational upper secondary education or vocational college, matriculation examination certificate and vocational college, university degree, no mother/father. University degree was encoded as 1, other options as 0. No mother and father was coded as a missing value. We used all three surveys to form the variable of family education starting from the ninth grade health survey and complementing missing values from other surveys when possible. A total of 38.6 percent of students had at least one parent with university-level education, reflecting a high education level in the population of the Helsinki Metropolitan area.

The class- and school-level variables

The class- and school-level variables were aggregated variables taking the class- and school-level means of the student-level scores.

Data analysis

Multilevel modelling was applied, as the method allowed us to examine student-, class- and school-level effects simultaneously by way of splitting the variance of the observed variables into the variance components for each level (Heck & Thomas, 2009). Linear three-level analyses were conducted using the Mplus statistical package (version 8; Muthen & Muthen, 1998–2012). Maximum likelihood estimation with non-normality robust standard errors was applied (MLR estimator; Muthen & Muthen, 1998–2012). Two-tailed significance testing at the criterion level of $p = .05$ was used. Intra-class correlations (ICC) of each predictor were calculated by using class and school as clustering variables in order to ascertain the percentage of the total variance at each level (see Heck & Thomas, 2009). If the variance component at the student-level variable was statistically significant at the cluster levels, a corresponding cluster variable (an aggregated variable) was included into the multilevel analyses (Table 3). According to this procedure, all student-level variables in the analyses were also analyzed at the class and school levels, taking the mean of the student score within each cluster.

In model 1, variables of school and family social capital were included into the model at the student, class and school level. Analyses were executed separately for school burnout (Model 1a) and academic achievement (Model 1b). In order to analyze the power of contextual effects, standardized student-level coefficients were compared to the corresponding class- and school-level estimates using z-scores

Table 3. Intra-class Correlations (ICC) and Variance Estimates at the Student, Class and School Levels (standard errors in parentheses).

Variables	ICC Class	ICC School	Within-group variance, student level (SE)	Between-class variance (SE)	Between-school variance (SE)
School burnout (7th grade)	.048	.013	48.321 (1.357)***	2.487 (.540)***	.688 (.321)*
School burnout (9th grade)	.029	.016	54.723 (1.335)***	1.645 (.472)***	.925 (.325)**
Academic achievement (7th grade)	.109	.050	5.830 (.203)***	.762 (.111)***	.343 (.095)***
Academic achievement (9th grade) ^a	.092	.086	8.629 (.267)***	.968 (.138)***	.901 (.220)***
School social capital	.072	.058	86.591 (2.702)***	7.216 (1.201)***	5.789 (1.562)***
Family social capital	.028	.025	16.761 (.453)***	.488 (.152)**	.438 (.116)***
Family education	.038	.056	.213 (.003)***	.009 (.002)***	.013 (.003)***

^aAcademic achievement in the ninth grade.

* $p < .05$; ** $p < .01$; *** $p < .001$.

(Muthen and Muthen, 1998–2012; see: Paternoster, Brame, Mazerolle, & Piquero, 1998). We utilized group-mean centering by class for the student-level predictors, group-mean centering by school for the class-level predictors and grand-mean centering for the school-level predictors as is recommended for research questions where the effects of the student-level predictors and the corresponding higher level predictors are compared (Enders & Tofighi, 2007). In Model 2, two dependent variables, school burnout and academic achievement, were simultaneously added into analysis in order to control their association. Also, the controlling variables of school burnout and academic achievement in the seventh grade and parents' education were added into Model 2.

Results

Students' school burnout and academic achievement varied significantly across classes and schools in the ninth grade (Table 3). ICC of school burnout was .029 at the class level and .016 at the school level, indicating that 2.9 percent of the variation occurred across classes and 1.6 percent across schools. 9.2 percent of the variation of academic achievement occurred across classes and 8.6 percent across schools. Significant variance was also found across classes and schools in the variables of school social capital, family social capital, school burnout and academic achievement in the seventh grade, and parents' education.

The student-, class- and school-level effects of school and family social capital were examined in Model 1a and 1b (Table 4). The dependent variable was school burnout in the ninth grade in Model 1a and the coefficient of determination (R^2) was 4.7% at the student level, 20.5% at the class level, and 25.1% at the school level. In Model 1b, the dependent variable was academic achievement in the school leaving certificate and R^2 was 3.9% at the student level, 21.0% at the class level, and 45.5% at the school level. School social capital in the seventh grade significantly predicted lower level of school burnout in the ninth grade (Model 1a) and better academic achievement in the school leaving certificate (Model

Table 4. Multilevel Linear Modeling for School Burnout (Model 1a) and Academic Achievement (Model 1b) ($N_{\text{student level}} = 4467$, $N_{\text{class level}} = 444$, $N_{\text{school level}} = 117$).

Parameters	Model 1a				Model 1b			
	<i>B</i>	<i>SE</i>	β	<i>SE</i>	<i>B</i>	<i>SE</i>	β	<i>SE</i>
Intercept	24.647***	.158	22.589***	3.389	24.423***	.093	25.618***	2.901
<i>Regression coefficients</i>								
Student level, 7th grade								
School social capital	-.147***	.013	-.176***	.015	.053***	.006	.162***	.018
Family social capital	-.155***	.032	-.081***	.017	.052***	.013	.072***	.018
Class level, 7th grade								
School social capital ^a	-.116*	.046	-.306**	.115	.058**	.018	.233**	.066
Family social capital ^a	-.235*	.117	-.227*	.112	.212***	.049	.306***	.064
School level, 7th grade								
School social capital ^b	-.131*	.061	-.404*	.186	.145***	.036	.521***	.125
Family social capital ^b	-.174	.170	-.167	.164	.226*	.104	.256*	.105
<i>Variance components</i>								
Student level residual variances	51.618***	1.372	.953***	.007	8.140***	.254	.961***	.007
Class level residual variances	1.464***	.395	.975***	.092	.686***	.129	.790***	.052
School level residual variances	.891*	.354	.749***	.156	.495**	.153	.545***	.118
R^2								
R^2 (student level)	.047				.039			
R^2 (class level)	.205				.210			
R^2 (school level)	.251				.455			
<i>Model fit information</i>								
Loglikelihood H0 Value	-15224.061				-11643.379			
Deviance (BIC)	30,532.166				23,371.183			

^aClass mean.

^bSchool mean.

* $p < .05$; ** $p < .01$; *** $p < .001$.

1b) at the three levels. Comparing to the effects of school social capital at the different levels (Model 1a), we discovered that the school mean ($\beta = -.404, p < .05$) and the class mean of school social capital ($\beta = -.306, p < .001$) were stronger predictors of students' school burnout than student-level school social capital ($\beta = -.176, p < .001$) but the differences were not statistically significant. However, the school mean of school social capital ($\beta = .521, p < .001$) predicted significantly stronger academic achievement (Model 1b) for a student than the class mean of school social capital ($\beta = .233, p < .01; z = 2.037, p < .05$).

Moreover, the effects of family social capital at the three levels were analyzed in Model 1a and 1b (Table 4). Family social capital in the seventh grade significantly predicted less school burnout at the student and class levels but not at the school level (Model 1a). This implies that student's and her/his classmates' family social capital has a bearing to students' school burnout but the school mean of family social capital did not. A further comparison between the standardized coefficients of student-level and class-level family social capital did not reveal a significant difference in their effects on students' school burnout. Model 1b showed that family social capital in the seventh grade predicted better academic achievement in the ninth grade at the student-, class- and school-level. We found no significant differences between the effects of the three levels on students' academic achievement.

The effects of school and family social capital were further analyzed including school burnout and academic achievement in the ninth grade simultaneously in the multilevel model with controlling variables (Model 2). Modelling two dependent variables was shown to be reasonable as the correlation between school burnout and academic achievement in the ninth grade was significant at the student level ($p < .001$, Table 5). Model 2 showed that student-level school social capital still predicted lower students' school burnout after controlling for previous school burnout, previous and concurrent academic achievement and parents' education. Also, student-level school social capital predicted better students' academic achievement ($p < .05$, Table 5). However, the longitudinal associations of the class mean and school mean of school social capital were not significant according to Model 2. One significant longitudinal association of family social capital was found in Model 2: the class-level mean of family capital predicted students' better academic achievement in the school leaving certificate. This indicated that classmates' family social capital had still some importance for students' academic achievement when many relevant factors had been controlled for.

Discussion

This is among the first studies examining the effect of family and school social capital on both students' academic achievement and school burnout with a longitudinal and multilevel approach. Our results suggest that school social capital predicts both better academic achievement and lower school burnout at the student level, even when previous school burnout and academic achievement were controlled for, thus showing that school social capital matters for students' positive outcomes. The present paper uses both health and school achievement related outcome measures, as previous research has found a strong connection between school performance and diverse indicators for health and well-being during adolescence (e.g. Due et al., 2011; Salmela-Aro, 2012). In our study, school burnout and academic achievement were correlated at the student level which is in line with the above-mentioned research findings. The longitudinal design showed that school social capital - the positive and supportive relationships between students and teachers - predicted positive outcomes, although earlier academic achievement and school burnout and parents' educational status were controlled for. Thus, our results contribute to the previous discussion in long-term effects of social capital on adolescents' well-being and educational performance. Previous studies have found a great deal of evidence that academic achievement in the beginning of lower secondary school is the strongest predictor of academic achievement when finishing lower secondary school (Motti-Stefanidi, Masten, & Asendorpf, 2015). However, our results detected that school social capital has an independent effect, even when controlling for previous academic achievement. Our results on the positive and independent effects of school social capital are parallel to Danielsen et al. (2009), who found that teacher support has a significant effect on adolescents' schools satisfaction, which in turn is associated with the needs of relatedness, competence

Table 5. Multilevel Linear Modeling for School Burnout and Academic Achievement (Model 2; $N_{\text{student level}} = 4256$, $N_{\text{class level}} = 444$, $N_{\text{school level}} = 117$).

Dependent variable	SB		AcAhc	
Parameters	<i>Estimate</i>	<i>SE</i>	<i>Estimate</i>	<i>SE</i>
Intercept	24.751***	.161	24.412***	.067
<i>Regression coefficients</i>				
Student level, 7th grade				
School social capital	-.049***	.013	.009*	.005
Family social capital	-.050	.029	.015	.009
AcAhc	-.311***	.051	.839***	.020
SB	.312***	.021	-.031***	.006
Parents education	-.665**	.251	.366***	.078
Class level, 7th grade				
School social capital ^a	.004	.047	.000	.019
Family social capital ^a	-.043	.125	.086*	.041
AcAhc ^a	-.360*	.142	.672***	.057
SB ^a	.338***	.067	-.054*	.027
Parents education ^a	-1.306	1.015	1.407**	.487
School level, 7th grade				
School social capital ^b	-.032	.072	.018	.028
Family social capital ^b	-.040	.173	.094	.075
AcAhc ^b	.038	.355	.874***	.121
SB ^b	.440**	.135	-.141*	.059
Parents education ^b	.319	1.582	1.331*	.623
<i>Variance components</i>				
Student level residual variances	46.909***	1.299	3.965***	.159
Class level residual variances	1.381***	.387	.429***	.069
School level residual variances	.817*	.386	.242***	.066
<i>Correlations</i>				
AcAhc with SB			-2.340***	.209
AcAhc ^a with SB ^a			-.102	.133
AcAhc ^b with SB ^b			-.015	.097
<i>Model fit information</i>				
Loglikelihood H0 Value	-23405.376			
Deviance (BIC)	47,153.352			

Note: SB = school burnout, AcAhc = Academic Achievement.

^aClass mean.

^bSchool mean.

* $p < .05$; ** $p < .01$; *** $p < .001$.

and autonomy of adolescents – indicators which can also be seen as relevant to school burnout. Our results are also in line with previous substantial studies underlining the positive effect of good teacher-student relationships on academic achievement (Hattie, 2009; Motti-Stefanidi et al., 2015).

Family social capital, instead, did not predict better academic achievement and lower school burnout when controlling for earlier academic achievement, school burnout and parents' educational status. One reason for this might be that our measurement captured only one dimension of the concept of family social capital: that of parental monitoring of adolescents' whereabouts and friends. Thus, it did not solely have enough weight, unlike other dimensions such as the quality and intensity of parent-child interactions, which were not included. Our study did not find any significant influence of class and school-level social capital on adolescents' health and education-related outcomes when preceding burnout and performance were controlled. This finding is inconsistent with recent results of Nielsen et al. (2015), who found that trust in one's school class may have significance for mental health differences among 11–15 year old adolescents. However, this inconsistency may be due to the different operationalization of social capital. Further, Nielsen et al. (2015) used cross-sectional data, which does not allow the effect of the prior situation to be taken into account, as was the case in our longitudinal data analysis. One other possible explanation for the lack of class and school-level influence on positive outcomes in the Finnish context might be that the school class does not form a tight-knit group when students begin upper secondary school at the age of 13 with new classmates. Students might also study in various

group combinations, and in the classroom, which is a fickle social space, student-teacher relationships may be experienced more individually, rather than collectively and shared with other students. This explanation of changing combinations of group members might also hold at the school level. Further, according to the newest PISA results, between-school variance is the second lowest in Finland which might be part of the explanation (OECD, 2016).

Our results also add to the discussion concerning the extent to which schools have an independent effects on adolescents' learning and well-being related outcomes or whether the outcomes are mainly due to family characteristics (Dufur, Parcel, and Mckune (2008). Our results support the evidence on schools' independent effect on academic achievement, meaning that a school's collective level of social capital predicted better academic achievement, despite how the individual student or his/her classmates experienced it. This result was significant in the analysis when previous burnout, academic achievement and parents' education were not included (Model 2). When academic achievement is the most significant predictor for adolescents' future educational options and educational aspirations, school social capital seems to matter both on the individual, as well as on the collective level. As we examined both school-burnout and academic achievement in the same model simultaneously, we are able to depict adolescent's well-being in more comprehensive terms, as research suggests that academic achievement and academic well-being are synergistic (Salmela-Aro & Upadaya, 2012; Salmela-Aro et al., 2009).

The existing theoretical discussion on capital at home versus capital at school (Dufur et al., 2008, 2013; Parcel et al., 2010) suggests that all forms of capital at home, in the neighborhood, and in school settings may relate to each other and that they each contribute to child well-being. Parcel et al. (2010) explains this with the concept of resource booster, meaning that children who usually are privileged in one context (e.g. family social capital) are also favored in other spheres (e.g. school social capital). Our results are in line with the concept of resource booster, as family social capital had an effect of students' academic outcomes at the school level, when the preceding burnout and academic achievement and parents' education were not included. The findings reveal that the class and school means of family social capital are stronger predictors of student's academic achievement than students' family social capital when controlling school burnout.

School social capital can be understood as an 'intangible resource that emerges – or fails to emerge – from social relations' (Plagens, 2011), thus positive relationships with teachers in the school contexts can function as promotive factors during the intensive development phase of adolescence. In terms of inequalities, Jackson's (2015) results suggest that the relationship between health and academic achievement emerges during the early years of life. Whether this leads to either shrinking or widening inequalities as adolescents grow up, depends partly on whether children have access to compensatory resources. Previous studies have shown that school social capital and family social capital are both significant resources for adolescent well-being (Parcel et al., 2010). Our results suggest that, for students at the ages of 13–16, schools have a role to play – though not a very large one – in offering health and learning-related resources to students. Whether school social capital can compensate – and to what extent – negative family contexts, is a challenge for future research and outside the scope of this paper.

Strengths and limitations

One major strength of this study is the longitudinal data of one age cohort in the Helsinki Metropolitan area comprising variations of socio-economic and regional differences among municipalities and schools in the area. Further, we were able to link our survey data to the register-based data of the students' GPA when finishing compulsory basic education, meaning that students' final results were objective and not based on their self-reported responses. The major limitation of our study is that the data we use here do not allow us to include friendship or neighborhood social capital in our analysis which, of course, are significant settings and sources for social capital (Dufur et al., 2013). For Coleman (1988, 1990) social capital in school settings is extremely important and future research should examine all relationships and interactions among parents, teachers, and students in the same design. However,

there is also evidence that parents and teachers may play a more critical role relative to peers in the well-being of children and teenagers (e.g. Hattie, 2009). The importance of these different networks and settings changes over time. As the non-response analysis showed, the final research population had somewhat better academic achievement and higher school and family social capital than the original cohort. This indicates that our results can mainly be generalized to the students with better academic achievement and higher social capital. More research is needed for students with lower level of academic achievement and social capital and to reach these students are challenges in the further research. Despite these limitations, our study implies, that school social capital could have an independent student-level effect on both students' academic achievement and school burnout. These positive outcomes and resources are among the most significant for future educational transitions and paths.

Conclusions and policy implications

The findings from this multilevel follow-up study reveal that school social capital predicts both better academic achievement and lower school burnout at the student level when graduating at ninth grade, even when controlling for parents' educational status, academic achievement and school burnout at seventh grade. This paper highlights the need to coordinate and integrate both educational policies and health policies in order to promote positive outcomes in school performance and academic well-being during the significant adolescent years of development and learning. Further, schools and especially school management should pay attention to supporting and constructing social capital as a culture and every-day practice in the school context.

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